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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,222	06/26/2003	Takayuki Togashi	Q76296	3704

23373 7590 11/01/2004  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

MOUTTET, BLAISE L

ART UNIT PAPER NUMBER

2853

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/606,222	Applicant(s) TOGASHI ET AL.	
	Examiner Blaise L Mouttet	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 3-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 9 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/26/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of species I (claim 2, claims 1 and 9 generic) in the reply filed on October 8, 2004 is acknowledged.

Claims 3-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on October 8, 2004.

### ***Priority***

2. Applicant's claim for foreign priority is acknowledged. The foreign priority papers were received November 7, 2003.

### ***Information Disclosure Statement***

3. The IDS submitted June 26, 2003 has been considered by the examiner.

### ***Drawings***

4. Replacement drawings were received on November 7, 2003.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include cable 32 as described on page 10, line 21 of the specification.

Figure 10 is objected to because "REFERENCE" is misspelled.

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

5. The claims are objected to as follows:

Claims 1, 2 and 9 are objected to because in claim 1, line 4 and claim 9, line 11 "each liquid ejecting head" lacks antecedent basis since only one ejecting head is previously claimed and "each" implies more than one. The examiner suggests changing "each liquid ejecting head" to read --the liquid ejecting head--. For purposes of examination under 35 USC 102 and 35 USC 103 this change is assumed.

Claims 1 and 2 are objected to because the wherein clause of claim 1, lines 15-17 fails to further define any of the previously recited structure because it does not relate the limitation contained therein with the recited structure. In light of applicant's written description and apparent intended meaning the examiner suggests changing "...is used as a reference driving voltage." To read --...is used as a reference driving

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voltage for driving the liquid ejecting head.-- in order to associate the wherein clause with the recited structure. For purposes of examination under 35 USC 102 and 35 USC 103 this change is assumed.

Claim 9 is objected to because "the pressure generator" in lines 6-7 lacks antecedent basis. In light of the written description the examiner suggests reciting a pressure generator in relation to the pressure generating chamber to provide the appropriate antecedent basis. For purposes of examination under 35 USC 102 and 35 USC 103 this change is assumed.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Takayanagi US 5,289,210.

Takayanagi discloses a liquid ejecting apparatus comprising:

a liquid ejecting head (32), formed with nozzle openings from which liquid drops are ejected (column 3, lines 9-13);

pressure generating chambers (liquid channels) with pressure generators (heaters), communicating with each of the nozzle openings (as explained in reference to

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column 10, lines 32-68 the heaters generate a bubble by thermal nucleation which exerts pressure on the liquid ink to eject the ink out of the liquid channels through the nozzles);

a driving signal generator (circuitry of figure 9), generating drive signals to drive the pressure generators (column 7, lines 3-61); and

a signal applier, applying the driving signals to the pressure generator based on liquid ejection data (necessary for the drive signal application as discussed in column 10, lines 42-51),

wherein the liquid ejecting head has driving voltage information in a reference state specific to the liquid ejecting head (as explained in column 6, lines 1-9 and column 6, lines 24-26 such information is stored in an EEPROM of the head); and

wherein the driving signal generator generates the driving signals based on the driving voltage information and a correction coefficient (as explained in column 7, lines 21-54 the gamma correction circuit 95 of the driving signal generator obtains the driving voltage information from the EEPROM 854 and multiplies the input image signal data by correction coefficient data inherent to the gamma curves set for each nozzle).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi US 6,050,665 in view of Asaka et al. US 6,398,331.

Kishi discloses a liquid ejecting apparatus, comprising:

a liquid ejecting head (2), formed with nozzle openings (20) from which liquid droplets are ejected (column 6, lines 21-33), and having a driving voltage information ID (rank) in a reference state specific to the liquid ejecting head (figure 10A, column 9, lines 29-50);

pressure generating chambers (ink channels), communicating with the nozzle openings (20) (column 6, lines 21-33);

piezoelectric vibrators, expanding and contracting the pressure generating chambers (column 6, lines 21-33);

a driving signal generator (42), generating driving signals to displace the piezoelectric vibrators (column 7, lines 14-28);

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switches, selectively applying the driving signals to the piezoelectric vibrators based on liquid ejecting data (inherent to the description of the driver IC 26 of column 7, lines 14-28 since printing of print characters requires selective actuation of the piezoelectric ejectors); and

flexible flat cables (30), transmitting the driving signals to the piezoelectric vibrators (column 6, lines 43-45).

Kishi fails to disclose that a voltage obtained by adding a correction coefficient to a voltage specified in the voltage information ID is used as a reference driving voltage.

Asaka et al. teaches adding a correction factor to a reference voltage used in piezoelectric liquid ejectors to generate a reference driving voltage that compensates for reduced liquid ejection speed over time and reduces the necessary frequency of ejection testing (abstract, column 6, lines 50-53).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to add a correction coefficient to the driving voltage specified by the driving voltage information ID of Kishi as taught by Asaka et al.

The motivation for doing so would have been to reduce the necessary frequency of ejection testing and avoid ink waste as taught by column 6, lines 50-53 of Asaka et al.

#### ***Additional Prior Art***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



Hiwada US 6,068,360 recognizes a similar problem as that discussed by the applicant and provides an alternate solution using negative feedback control.

Yaji US 6,168,252 teaches voltage drive selection for piezoelectric liquid ejection head based on the capacitance of the piezoelectric vibrator.

Holsten et al. US 6,334,660 recognizes a similar problem as that discussed by the applicant and provides an alternative solution of operating voltage selection.

Asauchi et al. US 2002/0018085 teaches correcting reference drive waveforms of a piezoelectric liquid ejection head for temperature and other factors by multiplying the waveform voltages by correction factors (paragraphs [0028], [0114-0118]).

Nishida et al. US 2003/0146742 teaches adding correction factors (RT1, RT2) to a reference pulse width (BT) of a piezoelectric liquid ejecting head (paragraph [0241]).

#### ***Allowable Subject Matter***

9. Claim 2 is objected to as dependent upon a rejected claim but would be allowable if written in independent form and if the other noted objections are remedied.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet who may be reached at telephone number (571) 272-2150. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, Art Unit 2853, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet October 29, 2004

*Blaise Mouttet 10/29/2004*